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Biology of Fireflies.—Williams ('17, Journ. N. Y. Ent. Soc., 25:11-33) reports the results of an extended study on six species of American fireflies, *Photinus consanguineus, Photinus scintillans, Ellychnia corrusca, Lucidota atra, Pyratomena* sp., and *Photurus pennsylvanica.* Of these, the last named is the most brilliant and the second named the faintest in luminescence in the adult stage. The larval light producing organ in *Photurus* and *Photinus* differs from the adult one which replaces it at maturity. The chief function of the light produced by adults is to bring the males and females together. The larvæ are all luminescent, the light appearing at two points on the eighth abdominal sternite. Luminescence also occurs in the pupal stage. Eggs are faintly luminous, at least for a short time. The larvæ are probably all carnivorous, but among the adults all seem to be herbivorous except the female of *Photurus* which is carnivorous. In most cases, the larval life extends over the greater part of two years. *Ellychnia corrusca* hibernates as an adult, but all the others hibernate as larvæ.

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NOTES ON OLIGOCHÆTA

Development of Genital Organs.—Gatenby ('16, Quart. Journ. Micr. Sci., 61:317-336) reports results of a study on "The Development of the Sperm Duct, Oviduct, and Spermatheca in Tubifex rivulorum." The gonads are formed very early but not until the worm is nearly half grown do the other parts of the genital organs begin to appear and the ducts are not fully developed until some of the genital products are ripe. The spermatheca begins to appear in X while the sperm duct is still incomplete and very rudimentary. The oviduct is the last to be developed. "The more highly differentiated structures begin to develop first, while the oviduct, which is very simple, appears quite late." No satisfactory evidence of dimorphism of spermatozoa, such as is reported by Dixon (see below), was found. There is also disagreement with Dixon's statement that testes cannot be found in the adult because they have been completely enclosed in the sperm sac, Gatenby holding that the position of the testes is not affected in any way by the formation of the sperm sac.

Tubifex.—Dixon ('15, Proc. and Trans. Liverpool Biological Society, L. M. B. C. Memoirs, No. XXIII, pp. 303-402) presents results of an extensive morphological study of *Tubifex*. The external anatomy and all of the principal internal systems are described in some detail, considerable attention being given to the reproductive organs. Among other things, the formation and transformation of the sex cells are described and two distinct kinds of spermatozoa are thought to have been demonstrated. A study of the parasites of *Tubifex* showed the presence of the following internal parasites: *Urospora sænuridis* (gregarine) and *Caryophyllæus* (cestode). *Opalina* and *Synactinomyxon tubificis,* reported by other workers in *Tubifex,* were not found. Certain fungi occur as external parasites, appearing, as a rule, in or near the setigerous sacs. *Vorticellæ* are frequently attached to the body-wall, but are not true parasites. A bibliography of seventy-one titles and seven plates accompany the paper.

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PARASITES IN THE MOUTH IN CASES OF PYORRHEA

Goodrich and Moseley (Jour. R. M. S., Dec. 1916) discuss the parasites that are found accompanying pyorrhea. They hold with Znamensky that pyorrhea always begins as an inflammation of the margin of the gums, followed by gradual recession of the gum. The tartar ridge at the margin of the gum is formed by the bacterial *Leptothrix* which, if not regularly and completely removed in the soft condition, becomes calcified and forms "hard" tartar. The authors believe that the tartar is deposited chiefly or wholly by *Leptothrix,* and note that excessive amount of tartar is an accompaniment of the disease.

They believe *Leptothrix* to be a pleomorphic organism appearing in coccoid, fusiform, and filamentous form under different circumstances. The plant is found in all recessions and pockets of the gums, in crypts of the tonsils, and may occur abundantly in the bronchial tubes.